THE FARMERS' CABINET,

AND

AMERICAN HERD-BOOK,

DEVOTED TO

AGRICULTURE, HORTICULTURE, AND RURAL AND DOMESTIC AFFAIRS.

"The Productions of the Earth will always be in proportion to the culture bestowed upon it."

Vol. VI.—No. 12.] 7th mo. (July,) 15th, 1842. [Whole No. 89.

JOSIAH TATUM,

PROPRIETOR AND PUBLISHER,

No. 50 North Fourth Street,

PHILADELPHIA.

Price one dollar per year.—For conditions see last page.

For the Farmers' Cabinet.

Review

Of "A Popular Treatise on Agricultural Chemistry. For the Use of the Practical Farmer.—By Charles Squarey." 12mo. pp 156. Price 62½cts. *Lea & Blanchard.* 1842.

THE author of this little book does not pretend to have originated any views concerning his subject. He has merely endeavoured to throw into a convenient form the facts and theories presented in the works of Davy, Liebig, Daubeny and others, and to place the necessary information within the reach of the class to whom it is most necessary—we allude to the agriculturists. In this he has succeeded. Much information is here compressed into a small space, and it is, we think, judiciously presented, in the most elementary manner, to suit those whose attention has never been called to this subject. But perhaps it would be best to quote his own observations in relation to his object.

"In the following pages it is intended to explain, as far as our knowledge already extends, the manner in which plants assimilate their food, and the sources of its supply. To do this, some preliminary knowledge is necessary; it is therefore proposed to consider the subjects in the following order: First.—The structure and functions of different parts of plants. Second.—The general attributes of the soil. Third.—The simple bodies forming the structure of the plant, the sources from which they are obtained, and the manner in which they are assimilated. And lastly.—The specification of the various manures now in use. In considering these subjects, it will be assumed that the reader has no previous knowledge of the question. No apology is therefore offered for the elementary character which each chapter will exhibit. It has been the desire of the writer to explain every circumstance as fully as possible, and although the use of technical terms is necessarily unavoidable in such a work, still a moderate degree of attention will overcome all difficulties, and, it is hoped, that the information afforded, is of such a kind, that no one will regret the trifling efforts it may have cost him to overcome them."

We are pleased with Mr. Squarey's views in regard to the estimation in which chemistry, as applied to agriculture, has been too generally held: he remarks, "Until a very recent period the consideration of this subject has been too generally deemed, if not altogether beyond the range of the agriculturist, at all events, as so distantly connected with him, as to be of little direct importance. And although at various periods men, eminent for their talents, and for the successful application of those talents to agriculture, have called the attention of the public to this subject, their endeavours have too often been of little avail, and the application of science to agriculture has been almost entirely neglected. Now, however, we date from a new era. A variety of circumstances have of late combined, to compel a greater attention on the part of all classes to this most important study: and the result is, that agriculture as a science has advanced with rapid strides, from darkness to comparative light; and from being the occupation of the lowest class in society, to one that is regarded, and justly so, as affording a field for the employment of the highest intellect; and happily also, one in which the greatest exertions may be most beneficially employed."

After describing those points in the structure of plants, which have a reference to his subject, our author proceeds to the consideration of the soil. He briefly enumerates the different varieties which it presents, and the general action produced upon it by the cultivation of vegetable substances. He next takes up the subject of the assimilation of matter by plants. In this chapter he describes the principal substances which enter into their composition, and which must therefore be abundantly supplied them, in order that they may thrive. These he considers as four, viz., carbon, hydrogen, nitrogen, and oxygen. He describes more at length their action on vegetable life, and the manner in which they should be applied to the plant. The next chapter considers the solid earthy

substances which are assimilated by vegetables. He here treats of the effects of potash, soda, lime, magnesia, and silex, with their respective salts, and the manner in which they benefit the soils to which they are applied. The last chapter consists of details concerning the various kinds of manure now in use in England. In it there are some interesting observations respecting the application of urine and the substance termed guano. This latter is a deposite from birds, which has been found, in immense quantities, chiefly on uninhabited islands in the South Sea, and along the coast of South America. It has been used, as manure, in Peru, from time immemorial, and has lately been introduced into England, where it has been used with the greatest success. The remarks, in this chapter, concerning the waste of valuable matter, which is observable even in the best kept farm-yard, are important, particularly in this country, where so little attention seems to have been turned to this subject. The most valuable part of farm-yard manure consists of the nitrogen, which is there present in large quantities, chiefly as a component part of ammonia. This is very volatile, and is constantly escaping after the manure begins to decompose, constituting a large portion of the steam which arises from it. Our author does not consider, with the older writers on agricultural chemistry, that the greater part of the nourishment of plants, is derived from the humus present in the soil, and the arguments he advances seem to prove that it affords them but little if any matter necessary for their support. In speaking of the long-mooted question of the necessity of carbon for the nourishment of plants, he does not seem to regard the emission of carbonic acid by them under certain circumstances, as any proof that it is not requisite to their existence. After mentioning its absorption by the spongelets of the root, he remarks: "Carbonic acid thus absorbed by the roots is dissolved in the sap which pervades all parts of the plant, and evaporates every moment through the leaves with the water, in quantity corresponding to such evaporation. Neither this emission of carbonic acid, nor the absorption of oxygen, has any connexion with the process of assimilation. The former is a mechanical, the latter purely a chemical process. If this view of the subject is correct, those plants which require the presence of oxygen to convert their volatile constituents into resins, should absorb the most when the influence of light is withdrawn, and such we find to be the case, for while the tasteless leaves of the American aloe absorb only 0.3 of their bulk of oxygen during the dark, the leaves of some of the fir tribe, which contain volatile and resinous oils, absorb ten times, and the leaves of the oak, containing tannic acid, fourteen times that quantity. This chemical action is shown also very plainly in the leaves of the cacalia ficoides and others, which sour in the morning from the absorption of oxygen during the night, tasteless at noon from the assimilation of carbon during the sun's light, and bitter in the evening, when, in addition to the carbon, a portion of the hydrogen of the water, a component part of all bitter substances, has been assimilated."

He gives some interesting observations, partially quoted from Liebig, concerning the sources from whence is derived the nitrogen necessary for the support of vegetable life. The air has constantly a small portion of ammonia, mingled mechanically with it. This is absorbed by the watery vapours, which afterwards condense and fall in the state of rain.

In conclusion we may observe, that, notwithstanding two or three faults in style and manner, we have been much pleased by the perusal of this little work. The matter appears well selected and arranged, and we should like to see it in the hands of every farmer and agriculturist throughout the country, for it contains knowledge which is, at present, very much wanted by that class. L.

For the Farmers' Cabinet.

The Compost-Yard.

In a recently published Scotch work on agriculture, denominated "The Book of the Farm," there appears a drawing and description of the "Compost-Yard," an enclosure distinct from, and yet closely connected with, the farm or barn-yard, and in which is situated a tank or sunken cistern, for the reception of the urine from the horse-stables, cow and ox-stalls, and the range of hog-styes, into which it is conveyed by under drains, so that the rain which falls in the yards does not flow into the tank, to weaken the liquid, or to overfill it with an useless article. Into this compost-yard is brought, at leisure times, large quantities of muck, virgin-earth or bank-soil, upon which is poured from time to time, as it is collected, the urine from the cistern. Several of these heaps are in preparation at the same time, and so soon as one of them becomes sufficiently saturated with the urine, it is turned over and carefully mixed, the clods being minutely broken and pulverized. And if, at this stage, lime is added and intimately mixed by turning, the mass will be found equal in value to soaper's ashes; by far more lasting in its effects, adding *staple* as well as *vigour* to the soil, and manufactured at an expense much less than by any other mode that can be devised; the urine of such an establishment being equal in value, and preferable for many purposes, to the more solid parts of the dung of the stables. By these very simple means, the resources of a farm can be doubled, while the labour attending the manufacture might be carried on at a time of leisure, affording profitable employment at all seasons of the year. And this mode of expending the urine of an establishment is far better than that which in some places is in use, namely, to carry it abroad in water-casks and sprinkle it on grass-lands while the crop is growing; for on some occasions it has been found, to say the least, almost useless, while in its concentrated state, it would prove in other cases injurious. One could easily imagine a tank, with a pump for lifting the liquid into an upper cistern, from whence it might be conveyed by means of a hose-pipe to any given distance, and to any part of the heaps where required; and thus, by the labour of a couple of hands for an hour or so, the contents of the cistern could be equally distributed over large quantities of earth, upon which more muck might then be spread, and the urine be again applied, so as at length to form heaps of compost of great magnitude, in a fit state to carry abroad as top-dressing to meadows or clovers, or suitable for any other purpose.

The solid contents of the farm-yard and stable manure could then be carried into the fields, and be there composted with other bank-earth, on the clearing of hedge-rows, &c., or the earth obtained from the lower parts of a field, where is often to be found large quantities of the richest parts of the soil, brought down by the washings of rains from time immemorial, and which only require to be composted and taken back to those parts from whence they have been brought, to render the land uniform in its produce, and enabling it to double the quantity of its yield. At the same time, great labour might sometimes be saved in the article of *carting*, if care were taken to make the arrangement to carry the compost *down hill* instead of *up the ascent*, and this might often be done, by taking the earth from the lower side of the field *above* that on which it is intended to carry it abroad, removing a set of bars here and there, to render ready access to the field below. This I have often been enabled to do, at a saving of more than one half the labour in cartage: and it behooves the farmer to consider well before commencing his compost heap — by an examination of the locality of his fields — whether such an arrangement be not practicable; remembering, however, that the heap must be formed on a dry soil, for if otherwise, the fermentation going on in the mass will draw up the moisture from the lower earth, and render all the operations difficult, laborious, and disagreeable; the character of the compost will be changed, and its fructifying principle deteriorated in a remarkable degree. The wholesome and refining process of fermentation being checked and rendered abortive by the chilling influence of a too great abundance of moisture, the compost will become cold, heavy, and adhesive; powerless in its effects, and rather a dead and putrid mass, than a warm and invigorating substance. This consideration is therefore of paramount importance to the success of the undertaking; and yet, how often have I seen a compost-heap placed in a cold, wet, low, and shady corner of a field, liable to be overflown by freshets from a neighbouring stream, or even by the effects of a heavy rain. But no practical man will be in danger of committing the error, if he have once assisted in turning a heap placed in such an unsuitable situation, the wet and heavy foundation of which will have taught him a lesson he will not be likely soon to forget. Vir.

June 27, 1842.

For the Farmers' Cabinet.

Field-Mice.

Mr. Editor,—In some of the agricultural papers I have seen it recommended to place scions above and below the part of a tree that has been barked by mice, so that when they shoot, they may form a medium by which the circulation of the sap in the tree may be kept up, and thus the existence of it may be secured. But, I would ask, would not these scions form a living bush around the tree, to its manifest injury and disfigurement? I fear they would, and would therefore propose to remove a portion of bark from some other tree, sufficiently large to cover the space girdled by the mice, fitting it neatly around its edges, and binding it carefully, covering it also with grafting clay, relying on the perfect success of the undertaking; being careful, however, to place the added bark in the same direction upwards that it had obtained on the tree from whence it had been removed, preferring also *that* from the same kind of tree if it can be obtained, especially as to its resinous or other qualities. We often hear of very serious mischief being caused by the field-mice, especially in winters when much snow has lain long on the ground, at the passing away of which a scene of desolation is revealed that is truly deplorable. But the instances which have been known amongst us have been slight indeed, when compared with what took place in England some years ago in two of the public forests, as related in that very interesting book, "Jessie's Gleanings in Natural History," vol. i. p, 166, where it is said:

"An extraordinary instance of the rapid increase of mice and the injury they sometimes do, occurred a few years ago in the new plantations made by order of the crown, in Dean Forest, Gloucestershire, and at the same time, in the New Forest, Hampshire, (about 100 miles distant). In these, vast numbers of the trees were destroyed, the mice having eaten quite through the roots of five years' old oaks and chestnuts, generally just below the surface of the ground; hollies also, five and six feet high, were completely barked round the bottom, while the mice were often seen feeding on their upper branches; the roots having been eaten through whenever they obstructed the runs of the mice, the bark constituting their food. Various plans were devised for their destruction, traps were set, poison laid, and cats turned out, but nothing appeared to lessen their number: it was at last suggested, that if trenches were dug, into which the mice might be enticed or fall, their destruction might be effected; these therefore, were made, twelve on each acre of land, from 18 to 20 inches in depth and two feet wide, wider at bottom than the top, hollowed under, so that the animal once in, could not easily get out again. In these holes at least 30,000 mice were caught in the course of three or four months; and it was calculated that a much greater number than this had been taken out of the trenches after being caught, by weasels, kites, hawks and owls, as also by crows, jays, &c.; the cats, also, resorting to these trenches to feed as well as dogs. As the mice increased, so did the birds of prey, of which at last there was an incredible number; and in addition to the quantity above-mentioned, multitudes were destroyed by poison, so that in Dean Forest alone, the number could not be less than 100,000, while in the New Forest the number destroyed could not but be equal. In addition to these means of destruction, it was found that when their food fell short in winter, they fed one upon another, this also often taking place in the bottom of the trenches, so that the total destruction in both forests could not but have been far above 200,000. There were two descriptions of these mice, one of them, the long-tailed field-mouse of Buffon—the *mulot;* the other, a short-tailed mouse, the *campagnol;* but there were about fifty of the latter taken to one of the former, the long-tailed mice having white breasts, with the tail the length of the body; the long-tailed mice being chiefly caught on the wet parts of the forest; the short-tailed, both on wet as well as dry ground; these having a thicker head, with ears very short, and almost lined in fur; its body being three inches in length, its tail one inch; the upper part of the body of a reddish brown, and the belly a deep ash colour; their nests being under the surface of the ground, where they produce from seven to nine young at a time. Amongst the birds of prey which made their appearance in Dean Forest during the time the mice were in the greatest numbers, was a small white owl, none of which had ever before been seen on the spot; these were considered to be the most destructive of any of their enemies; they were smaller than the brown owl, and had a kind of ruff around the head. At first, it was believed that the injury to the trees had been occasioned by rabbits, but it was soon found to proceed from the mice, as they were seen barking the trees, even at the height of three or four feet from the ground, having climbed the trees to that distance; making devastation indifferently, on the oaks, ash, beech, holly and willow, but scarcely touching the fir tribe. In a plantation in Dean Forest of 300 acres, not more than four or five trees were found which were not injured by the mice, or indeed destroyed by them; many plants, the size of a man's arm, were bitten through, and the roots were

gnawed so close to the stem, that some of the young trees were seen either reclining on one side, or level with the ground. Accurate accounts were kept by the foresters of the number of mice caught in the different enclosures in Dean Forest in *three* months, from September to January, and it was ascertained that upon 1,643 acres the number destroyed was 28,071, besides innumerable quantities otherwise destroyed. By far the greater number taken from the trenches were found dead, having exhausted themselves in their efforts to climb the sides, as well as having been drowned by water collected therein. Foxes were also seen hunting for mice, and devouring them greedily."

I have never found it difficult to keep the largest garden clear of mice, merely by keeping a couple of drip-traps continually set and in working order: these, as is well known, are made of a piece of board, one end of it projecting over a deep pan with water, set into the ground, and very nicely poised by a couple of iron pins driven through the side pieces into the drip, at the end of which is secured the bait, so that it slide not off when the mouse, by its weight, is tilted into the water below, when it instantly resumes its position and is ready for another *delivery;* these traps are, as I said, sufficient for the security of a very large garden, but they must be kept in order the whole year, especially in the winter, for during that season of scarcity of provisions, you will find that the mice will be enticed from all quarters, and great havoc will be made amongst them. The last time I visited my traps I found thirteen in one of them, and the trap in order for as many more; I should say, I find that a mixture of flour and butter is an excellent bait, and it withstands the effect of the weather, besides being fixed to the board by its adhesiveness. I may add, I place a projecting board over the bait to keep it dry, and sometimes fix peas or beans to the drop, as a change of food, through which I drive pins to keep them in place. This is a very convenient, cheap and effective trap; and by placing such an one in the runs used by the moles under the surface of the ground, sinking the pan deeper into the earth, a whole field is soon ridded of the nuisance; in many countries, these are the only traps in use for taking the mole, and none are found so successful or so convenient; these, however, are not used with bait, as that is not found necessary.

John Taney.

June 12, 1842.

To destroy lice on cattle, take the water in which potatoes have been boiled, and wash them with it. It is said the vermin will all be dead in two hours.

For the Farmers' Cabinet.

Renovation.

Mr. Editor,—Have any of your readers put to the trial of experiment the French mode of growing wheat by sowing on a hard, unstirred surface of soil, and covering the seed with straw, according to the plan detailed at p. 125, of the Cabinet for November? If they have, would they "report progress" for the information of their friends and neighbours? It is a most interesting enquiry, and I would fain hope that a year has not been suffered to pass away without testing the truth of a doctrine which seemed, at the time of its first promulgation, to have *nature* on its side, strange as it must have appeared to some of those who had never rationally considered the subject; but if it be on the score of curiosity only, I trust we shall hear of more than one fairly-tried experiment having been carried out to completion. In a very interesting work, which I am now reading, I find an account of manuring vineyards on the same principle, namely, with the cuttings of the vines, which is said to be practised in the wine countries of Europe with the most perfect results; and thinking that just at this time the subject may excite some interest amongst your vine-growing readers—for the season is at hand when the branches will require to be stopped, by breaking down those that have fruited—about July or August—when they can be chopped up and be buried in the soil at their foot, *secundum artem;* testing, by their next year's progress, the truth of the problem by the effect on their fruitfulness and well-being; I have copied a portion of the account for insertion in the pages of the Cabinet, subject of course to your approval.

"Nothing more," says a vine-dresser upon the banks of the Rhine, "is necessary for the manure of a vineyard than the branches of the vines themselves; my vineyard has been manured in this way for eight years, and yet more beautiful and richly-laden vines cannot be pointed out. I formerly followed the method usually practised in this district, and was obliged in consequence to purchase manure to a large amount. This is now entirely saved, and my land is in excellent condition; and when I see the fatiguing labour used in the manuring of vineyards—horses and men toiling up the mountains with unnecessary materials, I am inclined to say to all, come to my vineyard and see how a bountiful Creator has provided that vines should manure themselves like the trees in the forest! and even better than they, for the foliage falls from the trees in a forest only when the leaves are withered, and then they lie for years before they decay, but the branches are pruned from

the vines about the end of July, while still fresh and moist, and if they are then cut into small pieces and mixed with the earth, they undergo putrefaction so completely that at the end of four weeks not the smallest trace can be found."

Another poor man writes—"For the last ten years I had been unable to place dung on my vineyard because I am poor and could buy none; but I was very unwilling to allow my vines to go to decay, as they are my only source of support in my old age; and I often walked very anxiously amongst them without knowing what I should do. At last my necessities became greater, which made me more attentive, so I remarked that the grass was longer on those spots where the branches of the vine fell, than on those on which there were none. So I thought upon the matter and then said to myself, if those branches can make the grass grow large and strong and green, they ought also to be able to make my plants grow better and become strong and green,—I dug, therefore, my vineyard as deep as I would have done to put dung into it, and cut the branches into small pieces, placing them in the holes and covering them with earth. In a year I had the great satisfaction to see my barren vineyard become quite beautiful; and this plan I continue every year, and my vines grow splendidly and remain the whole summer green, even in the greatest heat. All my neighbours wonder very much how my vineyard has become so rich, and yet they all know that I have put no dung upon it for ten years."

A most ruinous plan of management of the vine prevails in some places; it is to pinch off the top of the bearing shoot when it has advanced about a foot beyond the last fruit-joint, with the view of throwing more of the juices of the tree into the fruit; and this it no doubt does; but this juice is not properly concocted or *cooked*, by passing on to the end of the shoot and returning to the fruit, there to be deposited in a state of purity, fitted by the hand of nature, for the express purpose, and in a way which she only knows how. Hence arises plethory and mildew, the vessels, overcharged with the crude sap are bursted, and then putricity and life are engendered, to the destruction of the crop. Of a piece with this highly improper treatment, is the removal of the tendrils; and, at a later period of the season, the leaves which shade the fruit, with the view of allowing the sun to fall upon it in its full vigour—all wrong, depend upon it: we cannot *improve* nature; all we can do is to *assist* her, as some one very properly has it. With the best wishes for the success of your well-conducted Journal, I am your Subscriber, but no

June 28th, 1842. VINE DRESSER.

Magnify your Calling.

I WISH I could see in all our farmers a disposition to magnify their calling; but I have been grieved in many a farm-house, to listen to lamentations over what they term their "hard lot." I have heard the residents upon a noble farm, all paid for, talk about drudgery, and never having their work done, and few or no opportunities for the children; and I have especially been sorry to hear the females lament over the hard fate of some promising youth of seventeen or eighteen, who was admirably filling up his duties, and training himself for extensive usefulness and influence. They have made comparison between his situation, coarsely clad and working hard, and coming in fatigued, with some cousin at college, or young man who *clerked* it in a city store, till at length the boy has become dissatisfied, and begged off from his true interests and happiness. I am conversant with no truer scenes of enjoyment than I have witnessed in American farm-houses, and even log cabins, where the father, under the influence of enlightened Christianity and sound views of life, has gone with his family, as the world have termed it, into the woods. The land is his own, and he has every inducement to improve it; he finds a healthy employment for himself and family, and is never at a loss for materials to occupy his mind. I do not think the physician has more occasion for research than the farmer; the proper food of vegetables and animals will alone constitute a wide and lasting field of investigation. The daily journal of a farmer is a source of much interest to himself and others. The record of his labours, the expression of his hopes, the nature of his fears, the opinions of his neighbours, the results of his experiments, the entire sum total of his operations, will prove a deep source of pleasure to any thinking man. If the establishment of agricultural societies, and the cattle shows of our country should have the effect of stimulating one farmer in every town to manage his land and stock upon the best principles of husbandry, there would be a wonderful and speedy alteration in the products of the earth, because comparison would force itself upon his friends and neighbours; and his example would be certainly beneficial, for prejudice itself will give way to profit.—*Chowles' Oration.*

To prevent weeds from growing in my nursery of trees, I cover the land thickly with tanner's spent bark; it prevents every thing but the trees from growing. I find that two loads of dung carried on the land in the spring, worth three loads carried on in the fall of the year. BLAKESLEY.

Manufacture of Eleaine and Stearine from Lard.

By a new process, patented by J. H. Smith, 122 Front Smith St. N. Y.

"The first process to be performed upon the lard is that of boiling, which may be effected either by the direct application of fire to the kettle, or by means of steam. When the latter is employed, I cause a steam-tube to descend from a steam boiler into the vessel and be coiled round on the said bottom so as to present a large heating surface to the lard, provision being made for carrying off the water and waste steam, in a manner well known; I usually perforate this tube with numerous small holes along the whole of that portion of it which is submerged below the lard, thus allowing the whole of the steam to pass into and through the lard. To operate with advantage, the vessel in which the boiling is effected should be of considerable capacity, holding, say, from ten to one hundred barrels. The length of time required for boiling will vary much, according to the quality of the lard: that which is fresh may not require to be boiled for more than four or five hours, whilst that which has been long kept may require twelve hours. It is of great importance to the perfecting of the separation of the Stearine and Eleaine that the boiling should be continued for a considerable period, as above indicated.

My most important improvement in the within described process consists in the employment of alcohol, which I mix with the lard in the kettle or boiler at the commencement of the operation. When the lard has become sufficiently fluid, I gradually pour and stir into it about one gallon of alcohol to every eighty gallons of lard, taking care to incorporate the two as intimately as possible; and this has the effect of causing a very perfect separation of the Stearine and Eleaine from each other by the spontaneous granulation of the former, which takes place when the boiled lard is allowed to cool in a state of rest. I sometimes combine camphor with the alcohol, dissolving about one fourth of a pound in each gallon of alcohol, which not only gives an agreeable odour to the products, but appears to co-operate with the alcohol to effect the object in view; the camphor, however, is not an essential ingredient, and may be omitted; while spirit of a lower proof than alcohol may be used, but not with equal effect or benefit.

After the boiling of the lard with the alcohol has been continued for a sufficient length of time, the fire is withdrawn or the supply of steam cut off, and the mass is allowed to cool sufficiently to be ladled or drawn off into hogsheads or other suitable coolers, when it is to be left at perfect rest to cool down and acquire the ordinary temperature of the atmosphere; and as the cooling proceeds, the granulation consequent upon the separation of the Stearine from the Eleaine will take place and become perfect. The material is then to be put into bags and pressed moderately under a press of any suitable kind, which will cause the Eleaine to flow out in a state of great purity, there not being contained within it any appreciable portion of Stearine; and this pressure is to be continued until the Stearine is as dry as it can be made in this way. The masses of solid matter thus obtained are to be re-melted, and in this state are poured into boxes or pans of the capacity of ten or twelve gallons and allowed to form lumps or blocks; which when removed from these vessels are piled or stacked in a room for a week or ten days more or less, the room at a temperature of nearly 80°, which will cause a sweating or oozing from the blocks, and they will improve in quality. The blocks are then to be rolled in cloths or put into bags and these placed between plates are to be submitted to very heavy pressure by means of an hydraulic press. After this pressure it is brought again into the form of blocks, and these are to be cut up by means of revolving or other knives or cutters, when the pieces thus obtained are to be put into bags and subjected to the action of hot water or of steam, in a press, until it becomes hard enough to be manufactured into candles, or put up for other purposes to which it may be desired to apply it. And the manner of subjecting it to the action of heated water or steam is, to place the bags containing the Stearine in a box or chest into which heated water or steam may be introduced, but not to such extent as to fuse the Stearine. A follower is then to be placed against the bags contained in the chest or box, and moderate pressure made upon them, and the material will now be found to have acquired all the required hardness, and to possess a wax-like consistency, such as would generally cause it to be mistaken for wax.

I am aware that alcohol has been used for the purpose of separating Eleaine and Stearine from each other in analytical chemistry, but the lard or other fatty matter consisting of these substances has, in this case, been dissolved in the heated alcohol, and the whole has been suffered to cool together; but this process would be altogether inapplicable to manufacturing purposes, as the cost would exceed the value of the product. In my manufacturing process, instead of dissolving the lard in alcohol, I add a small proportionate quantity of the latter to the former, the whole of which is driven off at an early period of the ebullition, but by its presence, or catelytically,

disposes the Eleaine or Stearine to separate from each other, which they do, after long boiling and subsequent cooling. I do not, therefore, claim the use of alcohol in separating Eleaine and Stearine from each other by dissolving the fatty matter in heated alcohol and by subsequently cooling the solution; but what I do claim as of my invention and wish to secure by letters patent, is, the within-described method of effectively promoting their separation by incorporating alcohol, or highly rectified spirits, with the lard in small proportionate quantities, say a gallon, more or less, of said alcohol or spirits, to eighty gallons of lard, and then boiling the mixture for several hours, by which boiling, the whole of the alcohol will be driven off, but will have left the Eleaine and Stearine with a disposition to separate from each other on a subsequent cooling, as herein indicated and made known. (Signed) JOHN H. SMITH."

MESSRS. WILLIS MARTIN & Co., Dillwyn Street, Philadelphia, have, for a long time, been engaged in preparing in great purity and by a process peculiar to themselves, the Eleaine or lard-oil, which has been sold under various names, but chiefly as olive-oil for manufacturing purposes, and which, in the dressing of cloths, has been found quite equal if not superior to every other. They still continue the manufacture, and are furnishing, at $1 00 per gallon retail, or 75 cents per gallon by the barrel, a very beautiful article for lamps, which upon a fair and extended trial we feel prepared to recommend to general notice. It gives a far brighter light than does whale-oil at the same price, emits neither smoke or smell during the burning or at the time of extinguishing, and seems in other respects preferable to all other, excepting, perhaps, the highest refined sperm-oil, which, however, is only two degrees more in *levity*—a property by which lamp-oil is to be judged—but many degrees higher in price than Eleaine. Messrs. M. are not yet prepared to manufacture candles from the Stearine, but we would recommend our friends to make trial of the lard-oil—which will be supplied either by the barrel, gallon or quart—in the expectation that they will find it a very excellent article, and by far preferable to fish-oil at the same price. ED.

For the Farmers' Cabinet.

Medicated Tar.

MR. EDITOR,—I find that some years ago the gardener of the Duke of Portland, Mr. W. Speechley, discovered an effectual mode of ridding trees and other vegetables of the blight insect by the following dressing. He took one pound of quicksilver, upon which he poured boiling water, which, after agitating for a considerable time, he poured off for use. To every gallon of this mercurial water he then added six ounces of soft soap, with which he washed the trees and plants, and an effectual cure is said to have followed. But Mr. M'Mahon very shrewedly observes, "mercury is not soluble *in any degree* in water, but if corrosive sublimate be substituted for crude mercury, there would be no doubt of its efficacy." Whatever good has arisen, therefore, from washing with the saponified mercurial water, must have proceeded from the soap, or more properly from the alkali contained in the soap, by which the acidity arising from the diseased plants was neutralized, all putricity being found to be highly charged with *oxygen*, which is the basis of acidity, or the *acidifying principle*. From the above, then, it would appear that Mr. Hagerston's discovery of the whale-oil soap is not original, effectual as it might have proved for the destruction of the blight insects on plants; and that in all probability a saponified solution of corrosive sublimate would prove far more effectual for the purpose than merely whale-oil soap dissolved in water.

In the 5th volume of the Cabinet, page 118, there is a most interesting article on the management of orchards, where mention is made of "medicated tar" for the purpose of dressing wounds made in the body or limbs of trees while eradicating canker, and which, there is no doubt would be found highly beneficial; I would suggest, however, the addition of soap to the corrosive sublimate before mixing with the tar; which would in all probability be then found perfectly effective when applied to the limbs and bodies of trees, while a solution of the sublimated soap without the tar, would be better adapted to the cleansing of the leaves. By turning to the page above mentioned, it will be found that half an ounce of corrosive sublimate in powder, dissolved in alcohol and mixed with three pints of tar, would be found sufficient for the dressing of 200 diseased trees; much, of course, depending upon their size and state of health. It is also recommended to use the medicated tar in simple pruning, anointing the parts as soon as the knife has passed; and no doubt the use of it would be found of great importance as a dressing after the eradication of worms from peach and other trees, as also while pruning the canker from diseased branches of the plum and cherry. The mixture might be thickened by an addition of fuller's earth or fine clay. C. D.

May 31, 1842.

Manure for Cranberries.

WHEN these are cultivated in gardens or fields of firm land, use for manure the muck or mud from the bogs where they grow spontaneously; by these means full crops of this most valuable fruit may be procured with the greatest certainty and at little cost or trouble, and of superiour flavour.

For the Farmers' Cabinet.

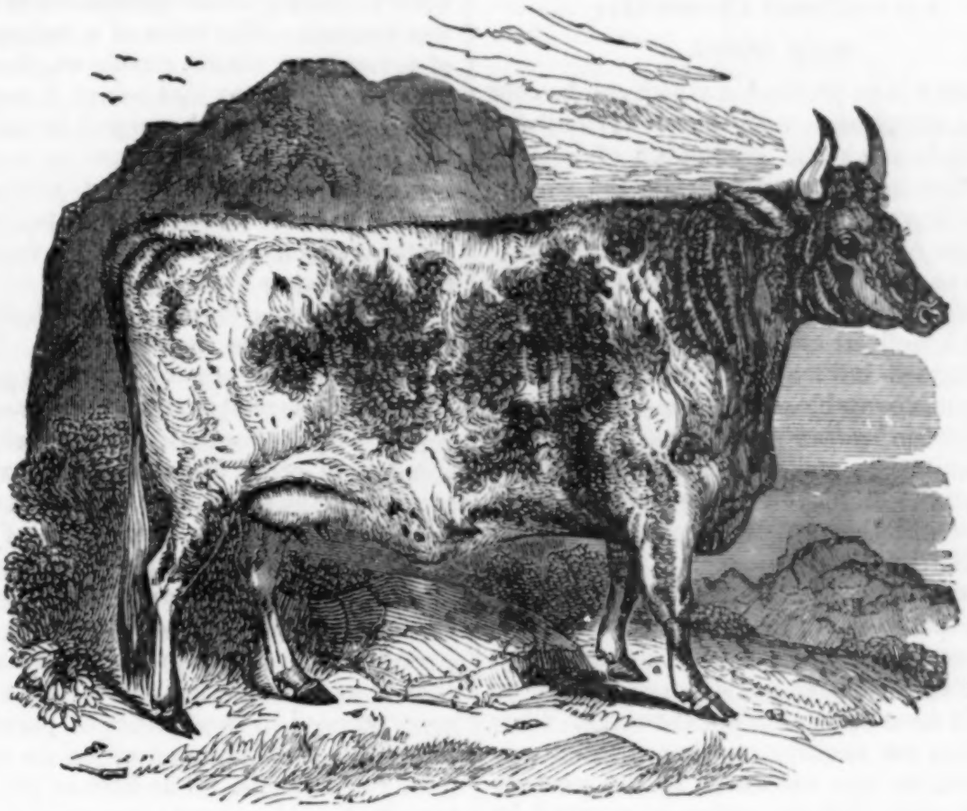
Autumnal Ploughing for Oats.

Mr. Editor,—It has been with considerable distrust that I have sometimes heard of the English mode of ploughing the land, designed for oats in the spring, early in the previous autumn; not being able to persuade myself that the land, after lying for so long a time unworked, would be found a fit seed-bed for the crop—in short, I thought the account was *foreign*, both to our circumstances and to the truth; but I have since learnt that the experiment has been made, and is likely to be crowned with success; if so, the plan is an excellent one for the relief of our spring labours, as well as giving us an opportunity of an early sowing—a circumstance which I have long been convinced is of vast importance in the cultivation of that crop. On this subject a friend has sent me the following account, extracted from some work on husbandry—a plan which he assures me would be found to work well in this country, the oat requiring a close, compact seed-bed, which is given by an autumnal ploughing, preparatory to a spring sowing. "On the 20th of October, I commenced ploughing a field of 52 acres for oats; the land broke up very fine, being after tares, and I feared that it would become too flat by the winter rains, &c., for spring sowing without another ploughing; but although the land was light, and fell so fine, yet at the seed time, the 20th of February, the oats were so completely covered by *five* harrowings, as to show the effects of early ploughing in the winter. This plan of fallowing for oats is admirable, and answers in every respect; the oats were buried deep, and prospered beyond those I sowed the same year after two ploughings; and when I mowed them, they were in every respect a great crop. I concluded, therefore, that ploughing thus early is best, since the earth, by receiving the winter rains and frosts, retains so much moisture, as to bring all the oats away at once; the contrary of which is often the case in light lands sown after the plough. In the beginning of November, I ploughed up four acres of a field containing fourteen acres, which had been laid down to red clover for two years, during which it had been mown; and although it was clayey land, it broke up pretty freely, and, therefore, having much other business on hand at the time, I thought I would delay the breaking up the rest of the field until January, supposing it would harrow well by the end of February, when sown with oats; accordingly, the latter end of January I ploughed the rest, and sowed the whole field with black oats the latter end of February. The land dressed well with the harrows, but this difference I observed—the four acres of land ploughed in November was broken by the frosts to dust, the other part was not so fine, although it worked very mellow. This experiment I made, on conjecture that the four acres ploughed so early would carry the best oats—and my expectation was answered, for although the whole field from the first appearance gave me great hopes of a good crop, by the latter end of May, the four acres which were ploughed in November were distinguishable in colour for a quarter of a mile, being much stronger and darker in colour. On the 8th of June, I took a view of another field consisting of six acres, which I had ploughed in the winter in the same manner, viz: four acres in October, when the ground was very dry, and in January the two remaining acres, the ground being then dry also; and this field had been, like the other, two years in red clover; both parts turned up very mellow, being sown to black oats in the latter end of February, and harrowed fine, only with this difference, the four acres ploughed in October worked like ashes. The result was like the former, the oats in the four acres were thicker, stouter, and of a deeper green than the two acres; and in addition, it is to be noted that in both the fields, on those parts ploughed earliest, no grass appeared during the winter, nor in the spring, to prejudice the harrowing."

On the occasion of spring-sowing oats on land turned up in the autumn, without other ploughing, it is asserted, that four bushels of seed per acre will not be found too large a quantity; that it will all come together and form a regular crop, without danger of falling before ripe; and the frost-pulverized surface of the land will be by far the best seed-bed for clover and the grass seeds, being more free from weeds, and better calculated for covering them: the crop of oats too will be larger in quantity and incomparably better in quality, coming to harvest earlier, with a much heavier straw. Might we not expect to find that this mode of culture will obtain notice throughout the country, so soon as the fact has been ascertained? John Daley.

One of the chief errors of our husbandry is, to cultivate too much land; because it is only half done. Half the quantity, with double the work on it, would insure double crops, which would be found more profitable.

"We should be sorry to have every body agree with us, or ourselves to agree with every body else—this would be dull work, and put an effectual stop to all inquiry—consequently, to all intellectual progress."



THE KERRY COW.

THE Cow of Kerry is truly *a poor man's cow*, living everywhere, hardy, and yielding, for her size, abundance of milk of good quality, and fatting rapidly when required so to do. They are found in almost every mountainous district; are small, light, active and wild: the head small, the horns short and turned rather upright; and although somewhat deficient in the hind quarters they are wide over the hips, and the bone not heavy: the hair long, the colour in some places black, in others brindled, and others black or brindled with white faces; fine in the neck with a lively eye and sharp muzzle, with great activity. They are exceedingly hardy, living through the winter, and sometimes fatting, on their native mountains and moors in the summer; and when removed to better pasture they fatten with great rapidity; are generally very good milkers and many of them *excellent* in this respect.

The slightest inspection of our present cut will convince the reader of the great difference between this breed and the larger breed of Irish cattle so faithfully pourtrayed at p. 113 of the Cabinet for November; but, were it not for the cloddiness about the shoulder, and the shortness and thickness of the lower part of the neck and the pied colour, we could almost fancy that we here saw the middle-horn north Devon cow. While the long-horned breed are met with in the valleys and rich pastures of the low land, this small race of animals is confined to the hilly and moory ground or scanty portion of land possessed by the cottager and small farmer; and yet there are spots of better pasture where they are found of a considerable size, and in Connaught, they are much improved in size as well as form; the horns somewhat larger, but still turning upward; but they are shorter in the leg and body, their loins and haunches heavy and wide; and although the hair is thick, the hide is mellow, and they thrive with a rapidity rarely excelled by any other breed. And although this breed is now not met with pure, except inland on the mountains, being nearly worn out in the more civilized parts of the country by repeated crossings with the Leicester, Hereford and Devon, yet for the dairy, all farmers still prefer those cows which show most of the native Irish blood. Mr. Rawson of Kildare thus describes the dairy cow of Kerry.—She should have a sweet countenance, neat, clean horn, head small, neck thin at head, tapering gently and increasing when meeting the shoulder, shoulders flat and thin in the blade, chine not too fine, chest deep and full at the breast, ribs round and swelling, hips not too wide and nearly concealed by the high arching of the ribs, hind quarters broad and lengthy, narrowing gradually to the tail, which should lie snug between the bones, the quarters on the outside flat, on the inside full, but not extending too low, legs fine and clean in the bone but not too long. All which is faithfully depicted in the cut above, exhibiting a cow about as perfect for dairy purposes as can well be conceived of; the mountainous situation which they occupy in Ireland seems to point them out, like the Welsh and the Scotch, as the original breed, and to prove, that one of a very similar character was indigenous to both islands.

Agricultural Chemistry.

FROM LIEBIG.

"THERE is no profession which can be compared in importance with that of agriculture; for to it belongs the production of food for man and animals: on it depends the welfare and development of the whole human species, the riches of the state, and all commerce.

"There is no other profession in which the application of correct principle is productive of more beneficial effects, or is of greater and more decided influence. Hence it appears quite unaccountable, that we may vainly search for *one leading principle* in the writings of agriculturists and vegetable physiologists. The methods employed in the cultivation of land are different in every country and in every district: and when we inquire the causes of these differences we receive the answer, that they depend upon circumstances. No answer can show ignorance more plainly, since no one has ever yet devoted himself to ascertain what these circumstances are. Thus also, when we enquire in what manner manure acts, we are answered by the most intelligent men, that its action is covered by the veil of Isis; and when we demand further what this means, we discover, merely, that the excrements of men and animals are supposed to contain an incomprehensible something which assists in the nutrition of plants, and increases their size; this opinion is embraced without even an attempt being made to discover the component parts of manure, or to become acquainted with its nature.

"In addition to the general conditions, such as heat, light, moisture and the component parts of the atmosphere, which are necessary for the growth of all plants, certain substances are found to exercise a peculiar influence on the development of particular families. These substances either are already contained in the soil, or are supplied to it in the form of the matter known under the general name of manure. But what does the soil contain, and what are the components of the substances used as manure? Until these points are satisfactorily determined, a rational system of agriculture cannot exist. The power and knowledge of the physiologist, of the agriculturist and chemist, must be united for the complete solution of these questions; and in order to attain this end, a commencement must be made.

"The *general* object of agriculture is, to produce in the most advantageous manner certain qualities, or a maximum size, in certain parts or organs of particular plants. Now, this object can be obtained only by the application of those substances which we know to be indispensable to the development of these parts or organs, or by supplying the conditions necessary to the production of the qualities desired. The rules of a rational system of agriculture should enable us, therefore, to give to each plant that which it requires for the attainment of the object in view. The *special* object of agriculture is, to obtain an abnormal development and production of certain parts of plants, or of certain vegetable matter, which are employed as food for man and animals, or for the purposes of industry.

"The means employed for effecting these two purposes are very different. Thus, the mode of culture, employed for the purpose of procuring fine pliable straw for Florentine hats is the very opposite to that which must be adopted in order to produce a maximum of grain from the same plant. Peculiar methods must be used for the production of nitrogen in the seeds; others, for giving strength and solidity to the straw; and others again must be followed, when we wish to give such strength and solidity to the straw as will enable it to bear the weight of the ear. We must proceed in the culture of plants in precisely the same manner as we do in the fattening of animals. The flesh of the stag and roe, or of wild animals in general, is quite void of fat, like the muscular flesh of the Arab; or it contains only small quantities of it. The production of flesh and fat may be artificially increased; all domestic animals, for example, contain much fat. We add to the quantity of food, or we lessen the processes of respiration and perspiration by preventing motion. The conditions necessary to effect this purpose in birds are different from those in quadrupeds; and it is well known that charcoal powder produces such an excessive growth of the liver of a goose as at length causes the death of the animal.

"The increase or dimunition of the vital activity of vegetables depends upon the heat and solar light, which we have not arbitrarily at our disposal: all that we can do is, to supply those substances which are adapted to assimilation by the power already present in the organs of the plant. But what are these substances? They may easily be detected by the examination of a soil, which is always fertile in given cosmical and atmospheric conditions: for it is evident, that the knowledge of its state and composition must enable us to discover the circumstances under which a sterile soil may be rendered fertile. It is the duty of the chemist to explain the composition of a fertile soil, but the discovery of its proper state or condition belongs to the agriculturist; our present business lies only with the former.

"Arable land is originally formed by the crumbling of rocks, and its properties depend on the nature of their principal component parts. Sand, clay and lime, are the names

given to the principal constituents of the different kinds of soil. Fine sand and limestone, in which there are no other inorganic substances except silicious earth, carbonate or silicate of lime, form absolutely barren soils. But argillaceous earths form always a part of fertile soil. Now, from whence came the argillaceous earths in arable land? what are their constituents, and what part do they play in forming vegetation? They are produced by the disintegration of aluminous minerals by the action of the weather: the common potash and soda-felspars, Labrador spar, mica, and the zeolites, are the most common aluminous earths, which undergo this change. These minerals are found mixed with other substances in granite, gneiss, mica-slate, porphyry, clay-slate, grāwacke, and the volcanic rocks, basalt, clinkstone and lava. In the grāwacke we have pure quartz, clay-slate, and lime; in the sandstones, quartz and loam. The transition limestone and the dolomitz contain an intermixture of clay, felspar, porphyry and clay-slate; and the mountain limestone is remarkable for the quantity of argillaceous earths which it contains.

"It is known that aluminous earths are most widely diffused on the surface of the earth, and as we have already mentioned, all fertile soils, or soils capable of culture, contain alumina as an invariable constituent.

"There must therefore be something in aluminous earth which enables it to exercise an influence on the life of plants, and to assist in their development. The property on which this depends is that of its invariably containing potash and soda. Alumina exercises only an indirect influence on vegetation, by its power of attracting and retaining water and ammonia: it is itself very rarely found in the ashes of plants, but silica is always present, having in most places entered the plants by means of alkalies.

"In order to form a distinct conception of the qualities of alkalies in aluminous minerals, it must be remembered that felspar contains 17¾ per cent of potash, albite 11½ per cent of soda, and mica 3 to 5 per cent: and that zeolite contains 13 to 16 of both alkalies together. Analysis has shown that clay-slate contains from 2¾ to 3⅓ per cent of potash, and loam from 1½ to 4 per cent of potash. If, now, we calculate from these data, and from the specific weights of the different substances, how much potash must be contained in a layer of soil, which has been formed by the disintegration of 40,000 square feet (1 Hessian acre) of one of these rocks to the depth of 20 inches, we find that a soil of felspar contains 1,152,000 lbs.: clink-stone contains 200,000 to 400,000; basalt 47,500 to 75,000; clay-slate, 100,000 to 200,000; loam 87,000 to 300,000. Potash is present in all clays; according to Fuchs, it is contained even in marl, so called in Europe: it has been found in all the argillaceous earths in which it has been sought.

"The fact that they contain potash may be proved in the clays of the transition and stratified mountains, as well as the recent formations surrounding Berlin, by simply digesting them with sulphuric acid, by which process alum is formed, (which is a sulphate of alumina and potasia.)

"When we consider this extraordinary distribution of potash over the surface of the earth, is it reasonable to have recourse to the idea, that the presence of this alkali in plants is due to the generation of a metallic oxide by a peculiar organic process for the component parts of the atmosphere! This opinion found adherents even after the method of detecting potash in soils was known; and suppositions of the same kind may be found even in the writings of some physiologists of the present day. Such opinions belong properly to the time when flint was conceived to be a product of chalk, a calcareous clay, because found therein, and when every thing which appeared incomprehensible on account of not having been investigated, was explained by assumptions far more incomprehensible."

For the Farmers' Cabinet.

Germination of Seeds.

Mr. Editor,—In perusing the "Treatise on Vegetable Physiology," of which mention is made at page 360 of your last number, I have been much interested with some remarks on the germination of seeds and the particular views taken by the writer, of this most important process of nature, which I deem worthy to be offered for insertion in the Cabinet; and should they meet your approval, I shall be glad to see them introduced to your pages, and am a constant reader. D. I.

"The conditions requisite for the germination of seeds, are warmth, moisture, and the presence of oxygen, the process being also favoured by darkness; and the influence of each of these agents will be readily understood. No vital action can go on without a certain amount of heat; the germination of the seed is, therefore, as much dependent on warmth, as the hatching of an egg of a bird, although the amount it requires is not so great. Moisture is also required, for the conversion into a fluid state of the dry nutriment which has been previously stored up in the seed; and no change can commence until this be supplied. The presence of oxygen is also necessary, because the conversion of starch into sugar, requires that some of the carbon of the former should be set free; and this can only be accomplished by the union

of it with oxygen, so as to form carbonic acid; and this process is favoured by darkness, because light has a tendency to produce the contrary change, namely, the fixation of the carbon within the structure. And it is interesting to observe how all these conditions are supplied in the ordinary course of nature by the soil in which the seeds are dropped. If these be sown during the spring or summer, they speedily begin to germinate; but if they are deposited in the autumn, they remain almost unchanged until the winter has passed and the returning warmth of the air and earth arouses them into activity. It is seldom that the soil is so completely destitute of moisture for any long time together as not to be able to excite seeds to germinate, but their sprouting is well known to be favoured by damp weather; and if seeds through being put into the ground during a drought remain undeveloped, they are brought forward very rapidly by a genial shower; and a porous soil is to be preferred on account of the free admission of air which it gives to germinating seed, as well as for the other processes of vegetation, while a stiff clay soil prevents this necessary contact, and thus impedes germination. So complete a check, indeed, may thus be produced that it has been proposed to bury seeds in clay rammed hard, when it is desired to convey them from one part of the world to another through very hot climates, the high temperature of which might destroy their vitality if its influence were not prevented by the bad-conducting power of the mass in which they are thus enclosed; for if seeds are buried very deep even in a light soil, the contact of oxygen will be sufficiently impeded to prevent their germination; and the bringing such seeds nearer the surface will then have as much influence in causing them to sprout, as the supply of either of the agents just mentioned, which might have been previously deficient.

The seeds of most plants are endowed with a remarkable power of preserving their vitality for an almost unlimited time, if they are placed in circumstances which neither call their properties into active exercise, nor occasion the decay of their structure; the conditions being a low temperature, dryness of the surrounding medium, and the absence of oxygen; and if all these are supplied, there seems no limit to the period during which seeds may retain their vitality. And even if moisture or oxygen be not entirely excluded, the same effect may result, provided that the temperature be low and uniform. Thus, the seeds of most plants may be kept for several years freely exposed to the air, provided they are not exposed to dampness, which will either cause them to germinate or to decay.

Instances are frequent, in which ground that has been turned up, spontaneously produced plants different from any in the neighbourhood. The following circumstance which occurred about thirty years ago in the state of Maine, is very remarkable: some well-diggers while sinking a well at the distance of about forty miles from the sea, struck, at the depth of twenty feet, a layer of sand, nothing similar being to be found in the neighbourhood, or anywhere nearer than the sea-beach. As it was drawn up from the well, it was placed in a heap by itself, and was at last spread abroad around the spot on which it had been heaped, and was for some time scarcely remembered; in a year or two however, it was perceived that a great number of small trees had sprung up from the ground over which the sand had been strown, and these trees were at length ascertained to be the beach-plum; and they actually bore the beach plum, which had never before been seen, except immediately upon the sea-shore. These trees must therefore have sprung from seed which had existed in the stratum of sea-sand pierced by the well-diggers, and on exposure to the air they vegetated. But how long they had remained inactive beneath the surface of the earth it would be quite impossible to conjecture. It is said that some grains of wheat which were found in the window of a house in Herculaneum, vegetated when placed in the earth, after being buried about 2000 years. And the grains of wheat and other seeds enclosed in the bandages that envelope mummies are said to have germinated; and there is nothing improbable in the fact; but as the Arabs, from whom the mummies are commonly obtained, are in the habit of previously unrolling them in search of coins &c., it is not always certain that the seeds which have sprouted were really at first enclosed with the mummies. But perhaps the most remarkable instance on record, as presenting most satisfactory proof of the lapse of at least 1600 or 1700 years, is one related by Dr. Lindley. "I have now before me," he says, "three plants of Raspberries which have been raised in the gardens of the Horticultural society from seeds taken from the stomach of a man, whose skeleton was found thirty feet below the surface of the earth, at the bottom of a Barrow or Tumulus, which was opened near Dorchester, England; he had been buried with some coins of the emperor Hadrian!" These barrows or tumuli are large mounds of earth evidently artificial, for, where dug into, they are found to contain human remains, with pottery, weapons, &c., and as they are generally found together, they appear to have been erected on fields of battle, to contain the bodies of the slain."

For the Farmers' Cabinet.

Shoeing the Horse.

Mr. Editor,—The remark of your correspondent at page 318 of your Number for May, "That many of us transpose the order of our labours," reminds me of a mode adopted in the shoeing of the horse, which I once witnessed, and which is I believe of importance sufficient to deserve notice in the pages of your valuable and very interesting work. It occurred at the town of Croydon, near London, which is known as the centre of the stag-hunt, so well attended by the whole country around, and especially by the high-bred bloods of London: and where may be seen a field of the best horses in the whole world — many of them worth their five or seven thousand dollars.

As I once passed through this town, one of my horses' shoes became loose, and I went to the shop of a smith named Lovelace, to get it fastened; the shoe was nearly new, and had become loose in consequence of the nails having drawn out of the hoof, although they had been clinched in the manner universally practised. The smith remarked that all the other shoes were loose, and would soon drop off, when I requested him to take them off and replace them; and then did I perceive the different mode which he adopted for fixing them, which I will here detail. As fast as he drove the nails, he merely bent the points down to the hoof, without, as is customary, twisting them off with the pincers; these he then *drove home*, clinching them against a heavy pair of pincers, which were not made very sharp; and after this had been very carefully done, he twisted off each nail as close as possible to the hoof; the pincers being dull, the nail would hold, so as to get a perfect *twist round* before it separated. These twists were then beaten close into the hoof and filed smooth, but not deep, or with the view to rasp off the twist of the nail. "Oh ho!" said I, "I have learnt a lesson in horse-shoeing." "Yes," said he, "and a valuable one; if I were ever to lose a single shoe in a long day's hunt, I should have to shut up my shop; my business is to shoe the horses belonging to the hunt, and the loss of a shoe would be the probable ruin of a horse worth, perhaps, a thousand pounds; but I never am fearful of such an accident."—"Simply, because you drive home and clinch the nails before you twist them off," said I—"Yes," replied he, "by which I secure a *rivet*, as well as a *clinch*." The thing was as clear as the light of day, and I have several times endeavoured to make our shoeing-smiths understand it, but they cannot *see* the advantage it would be to *themselves*, and guess, therefore, *it would never do in these parts;* but if my brother farmers cannot see how it works with half an eye, and have not the resolution to get it put into practice, they ought to see the shoes drop from the feet of their horses daily, as I was once accustomed to do. Now, let any one take up an old horse-shoe at any of the smiths' shops on the road, and examine the clinch of the nails which have drawn out of the hoof, and he will soon perceive how the thing operates. In short, if the nails are driven home before twisting off, and the *rivet* formed by the *twist* be not afterwards removed by the rasp, I should be glad to be told how the shoe is to come off at all, unless by first cutting out the twist. I am, sir, a constant reader of the Cabinet, and one who has benefited many dollars by the various hints which have been given in its pages. J. S.

Amongst which, perhaps, no one has appeared of more value to our practical readers than that here presented. Will our correspondent accept thanks for his very interesting "hint," which is given in the true spirit of reciprocity. Ed.

Anecdotes of the Dog.

FROM JESSIE'S GLEANINGS.

"I delight in hearing well-authenticated anecdotes of the sagacity and attachment of Dogs: their fidelity to man is so conspicuous, and they are so capable of showing great and extraordinary instances of noble and disinterested affection, added to an instinct which is nearly allied to reason, that I shall devote a short space in relating some well-attested facts concerning them.

One of these was recently related to me by the late Captain Gooch; he informed me that Captain Dance brought with him from China a native dog; after his ship was at her moorings in the Thames at London, he took a chaise, put the dog in it, and drove to his house in Surrey, when *Bonner*, the name of the dog, was made over to the Captain's sisters. The next night, as the ship was getting under weigh for the docks, one of the sailors heard a loud barking amongst the rushes on the Kent side of the river, and immediately exclaimed it was Bonner's bark: that, however, was thought impossible, as the Captain had taken him away the day before: a boat was at length lowered, and on arriving at the side of the river, Bonner was discovered and brought on board. Here was an instance of a dog being brought to a strange country, and taken in a carriage a distance of some 25 miles from the ship he had left, finding his way back to it, through a country essentially different from his own—a different soil and climate, different objects and different people; but by what instinct he was enabled to do this, is not easy to define.

During the time that lambs are weaned, they are apt to stray in search of their dams; Hogg, the Ettrick shepherd, had at one time 700 of these under his care, which broke away in the middle of the night and scampered off in three different parties across the hills, in spite of all he and his assistant could do to keep them together. Addressing his dog he said, 'my man, they 're a' awa'!' The night was so dark that he did not see the dog, but the faithful animal heard his master's words, and without more adò, he silently set off in quest of the flock: meanwhile the shepherd and his assistant spent the night in scouring the hills for miles around, but could see nothing of the flock or dog. On their way home in the morning, they discovered a flock of lambs at the bottom of a deep ravine, and the dog standing in front of them, looking all around for relief, but still true to his charge; not one lamb of the whole flock was wanting.

A farmer residing at Halling in Kent was late one evening at market; on returning at night with his dog, he again stopped at Aylesford and drank so as to leave the place in a state of intoxication; his way lay over a brook, which was, in the best season of the year, a very dangerous one for a drunken man, but now the whole face of the country was covered by deep snow, and the frost was intense. By a sudden reel, he passed over a ditch on his right hand, and took towards the river, but having a high bank to mount, and, exhausted with wandering and the effect of liquor, he fell among the snow, in one of the coldest nights ever known, and turning on his back was soon overpowered with either sleep or the cold, when his faithful dog scraped away the snow so as to form a sort of protecting wall around him; then, mounting upon the exposed body, rolled himself around and laid upon his master's breast, for which his shaggy coat formed a most seasonable covering, and eventually, protection, during the dreadful severity of the night, the snow falling all the time. The following morning he was found by a person gunning, who perceiving an uncommon appearance, ventured to approach, when the dog got off the body, shaking himself, and encouraging the sportsman to come near by actions of the most significant nature: upon wiping the encrusted ice from the face, the countenance was known, and by the means adopted, life was restored; when the grateful master ordered a silver collar to be made for his faithful servant, recording the fact.

A friend had a terrier which he was sometimes in the habit of confining; he frequently missed the dog's collar, and at last discovered that the animal carried it off in its mouth, in order to hide it, being aware that it was one of the instruments of his confinement. But this is not more extraordinary than what might be seen at the zoological farm on Kingston Hill, where the buffalo, who has a strong ring passed through the cartilage of his nose, to which is attached a chain about two feet in length with a ring at the end about 3 or 4 inches in diameter, is in the practice, to prevent himself from treading on it, of putting his horn through the ring and then shaking his head until the ring is made to rest at the bottom of the horn; and at any time the ring may be seen in this position.

"One of the fine deer hounds in Richmond park, instead of seizing the deer by the ear or neck, as is usually the case when they stand at bay, always takes it by the skin of the forehead, between the antlers — a difficult place to hold it by, and one of peculiar danger to the dog.—On slipping a puppy of this particular hound at a deer for the first time, when it was only nine or ten months old, it immediately seized the deer when brought to bay in the same manner its mother had done, and still continues to do so.

A gentleman was shooting by the side of a hill, and shot at and wounded a hare, which ran through one of the several holes made at the hottom of the wall; the dog leaped the wall, caught the hare and returned with it in his mouth, but finding he could not leap the wall with the hare in his mouth, pushed it with his nose as far through the hole as he could, leaped over, and dragging it through the hole, brought it to his master.

It was a dark night, and as the mail-coach was travelling at its usual rate, a dog barked incessantly before the horses, and jumped up to their heads. The coachman, fearful of some accident, pulled up, and the guard got down for the purpose of driving off the dog, which ran a little way and then returned, with such gestures as induced him to take one of the lamps and follow the dog, when at about the distance of 100 yards, he found a man lying drunk across the road, and his horse grazing by the side of it!

A friend, while shooting wild-fowl with his brother, was attended by a sagacious Newfoundland dog; in getting near some reeds by the side of a river, they threw down their hats and crept to the side of the water when they fired. They then sent the dog for their hats, one of which was smaller than the other: after several attempts to bring them together in his mouth, the dog at last placed the smaller hat into the larger one, pressed it down with his foot and thus brought both together.

A gentleman in Sussex had an old spaniel which, if the day was rainy, would remain perfectly quiet in the house, but if fine, he became restless at the usual time for his master to go out with his gun, and would try to

draw him out by the flap of his coat; and when the door was open, he would immediately run to the lodge at a considerable distance, when the game-keeper knew his master was ready; and then he would return quickly to the house. Another gentleman, being a bad shot, when he has missed his game several times together, the dog gets provoked, and has sometimes attacked his master in a manner not to be misunderstood.

Mr. Edward Cook, after having lived some time with his brother at Togsten in Northumberland, went to America, and took with him a pointer dog, which he lost soon after, while shooting in the woods near Baltimore. Some time after, Mr. and Mrs. Cook, who continued to reside at Togsten, were alarmed at hearing a dog bark in the night; they admitted it into the house, and found it was the same their brother had taken with him to America. The dog continued with them until the return of their brother, when they mutually recognised each other; but Mr. Cook was never able to trace by what vessel the dog returned from America, or in what part of England it had been landed.

A lady residing in the vicinity of London had a terrier dog which was much attached to her; she gave this dog to a friend who was going to reside at Bremen, (Germany.) In about a week after her friend's arrival, he wrote her word that the dog, after pining and appearing completely wretched, had disappeared, and, that after a most active search, nothing could be heard of him. In a little time, however, just as she was retiring for the night, a loud barking was heard under her window, and a pushing at the door; on opening it, the dog sprang in, rather thinner than when he left, but still in good plight: how he got back could never be ascertained. During the late wars in Europe, instances occurred of dogs being found on the fields of battle protecting the dead bodies of their masters from being devoured by beasts and birds of prey, watching over them with the utmost care, and uttering howls, which showed alike their misery and affection.

A farmer lived in a very lonely situation, no house being within two miles of his dwelling. He was in the habit of drinking deeply, and would frequently remain at the market many days: his family therefore did not sit up for him at night. On one occasion, however, when they had gone to bed, they were alarmed by the violent barking and howling of the house-dog, which always rested in the kitchen. His mistress and two men-servants got up and endeavoured to appease the dog, but the animal rushed with the utmost violence against the door, and used every endeavour to get out, biting at the wood-work, and at the same time sending forth most piteous howlings. The people in the house apprehended an attack of robbers, but at length they opened the door and the dog rushed out; but within an hour, the voice of the farmer was heard, and upon the door being opened, he appeared, attended by the dog. He said, upon returning from market drunk, he fell from his horse into a deep dyke, and was wholly unable to get out, the water being up to his neck: he clung to the bank, and there held on till he was almost frozen to death, and he remembered crying out loudly for help; and just as all hope had left him and he was nearly exhausted, he found himself seized by the collar of his coat by his noble and faithful dog, who succeeded by his exertions in extricating him from the ditch, and with the utmost difficulty he reached home. He was a mile from home when he fell into the water, and the supposition is, that the dog, lying with his head on the ground — the earth being a conductor of sound — was enabled to hear the cries of his master for help during the stillness of the night, and was thus the means of saving his life!"

For the Farmers' Cabinet.

The Flower-Pot Bee-Hive.

Mr. Editor,—After all that has been said and written on the proper construction of the bee-hive, and the praises which have been sung in favour of the palace of several stories, the non-swarming, self-ventilating, moth-preventing, life-preserving structures, to the tune of more than twenty dollars a-piece, perhaps there is one which will at length take the lead of all, in the march of bee-breeding, and that is *the common garden flower-pot!* It is strong, warm in cold and cool in hot weather, cheap, simple, convenient, and particularly neat in appearance; it is only necessary to take one of the largest size for a breeding-*pot*, and when it is desired to add to the hive, to choose one of the next size, the mouth of which shall exactly fit the bottom of that below it, and open the hole; and immediately it becomes an elegant and neatly-finished compartment, which might in this way be added to, forming a pyramid of most exact structure and elegant proportions, to any height required. A hole of entrance could easily be cut in the edge of the lower pot, or two holes pretty near together may be better; it might be placed close to the bottom-board, or raised half an inch all round by small wedges, which might be preferable in hot weather—any how you might wish to fix it—and all, comparatively, at a very trifling expense; the taking away the upper pot, in case of its becoming full, requiring only a cork with which to stop the hole of communi-

cation with the lower pot. Now, I calculate this plan of a hive will prove better adapted for the health of the bees than many highly-finished domes of expensive workmanship, which, I have reason to know, the bees do not value *a cent*; for, after being at the expense of erecting one which I thought would win the heart of the most fastidious bee that was ever created, and placing in it a swarm of the present season, they all immediately left it; but being determined that they should stay, *nolens volens*, they were returned, merely to give them another opportunity to show that they were determined to have their own way: after this they were placed in a common home-made box, where they are industrious and happy. A person who has fifteen hives told me this day, that his strongest swarm inhabits the half of a salt-meat barrel, the only substitute for a hive which he possessed at the swarming of the bees, but which they have since filled with the choicest honey. Now, as I have taken no patent for the *flower-pot hive*, it is at the acceptance of any of your numerous readers, only requesting those who make trial of it, to afford the Editor the means of judging of the flavour of the honey made in an earthen pot instead of a box, which I have a notion will be found very superior. John Starkey.

June 19, 1842.

Gardening.

There is not in life a more delightful occupation than gardening. To breathe the pure mild air of spring, to prepare the beds and borders for vegetables, plants and flowers; to sow the seed, and set out the various slips and cuttings, arranging every thing with order and taste; to look earnestly for the first leaf and bud and flower; to watch their growth, to enjoy their beauty and fragrance, to show them to one's friends, to talk about them, to have them admired, and to know that all is the work of your hands or directions—this is an enjoyment, scarcely to be equalled, and accessible, in this country, to all. Let none then fail to secure it. We always thought it evidence of a good wife, to see her often in the garden, and fond of inspecting and attending to its proper cultivation and management. Depend upon it she is a blessing to her husband and family. We would advise our young friends, who want to marry, and they are, in truth, a goodly number, to avoid those young ladies who seem to have an aversion to the primitive, useful, and beautiful art of gardening. We never knew a lady or gentleman, who was extremely fond of flowers and shrubbery, who had not a warm heart and generous disposition.—*Miss. Guard.*

Germination of Plants on Rocks.

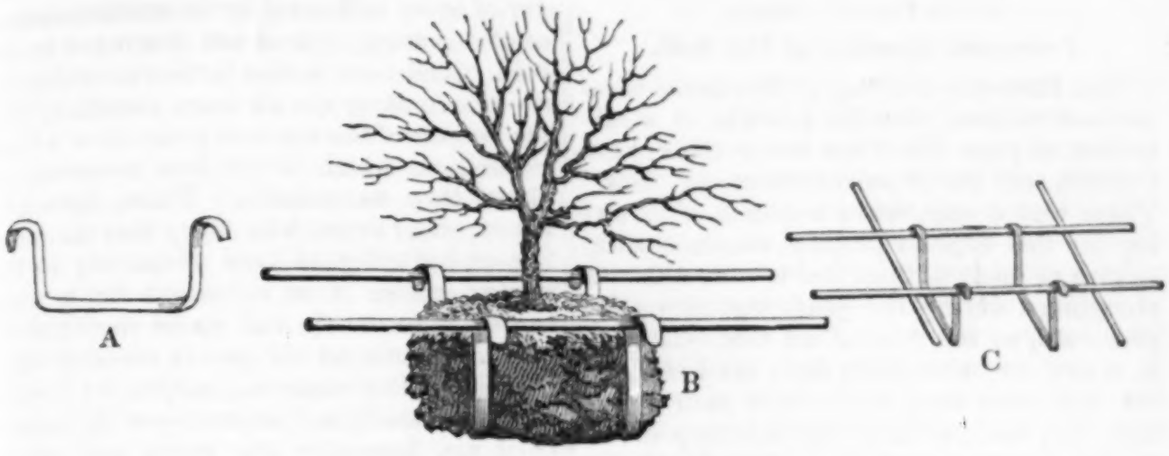
VEGETABLE PHYSIOLOGY.

The family of lichens seem, as it were, chained to the rocks on which they grow, and which they labour to improve for the benefit of others. The mode in which they prepare the sterile rock for the reception of plants which require a higher kind of nourishment is most remarkable; they may be said to dig themselves graves for the reception of their remains, when death and decay would otherwise dissipate them to the winds: for, whilst living, these lichens form a considerable quantity of oxalic acid—which is a peculiar compound of carbon and oxygen—and this acts chemically upon the rock, especially if limestone, forming a hollow which retains the particles of the abraded structure, when their term of existence is expired. Then the moisture, which is caught in these hollows, finds its way into the cracks and crevices of the rocks, and when frozen, rends them by its expansion into minute fragments, and thus adds more and more to the formation of soil—successive generations of these continuously and indefatigably perform their duties, until at length, as the result of their accumulated toil, the barren and insulated rock, or the pumiced lava of the volcano become converted into fruitful fields; for where Flora's standard has once been planted on tracts thus claimed, they are soon colonized by plants of other tribes; the mosses, ferns, and other cryptogamia follow, and at last, by the growth and decay of successive generations of plants, a sufficient thickness of soil is produced for the nourishment of luxuriant herbage, and the support of the lofty forest-tree. And thus, by the labours of these apparently very insignificant plants, men are enabled to reap a harvest, and to supply themselves with timber from the forests; and cattle increase and multiply on what was originally a naked and desolate rock! One of nature's truest delineators thus described such a process, as it occurs on ruined buildings:—

"Seeds, to our eyes invisible, will find
On the rude rock the bed that fits their kind;
Then, in the rugged soil they safely dwell,
Till showers and snows the subtle atoms swell,
And spread th' enduring foliage. Then we trace
The freckled flower upon the flinty vase;
These all increase, till, in unnoted years,
The stony tower as grey with age appears,
With coats of vegetation thinly spread
Coat above coat, the living on the dead.
These then dissolve to dust, and make a way
For bolder foliage, nursed by their decay.
The long-enduring ferns in time will all
Die, and depose their dust upon the wall,
Where the wing'd seed may rest—till many a flower
Shows Flora's triumph o'er the falling tower."

Crabbe.

To stop the effusion of blood, apply cobwebs, and bind them on the wound.



TRANSPLANTING TREES.

FROM JESSIE'S GLEANINGS.

"I HAVE adopted a method of transplanting trees, which I consider more generally to be depended upon, and much cheaper, than that invented by Sir H. Stewart. On an experiment upon a large scale, and under many disadvantages, I have not lost a single tree out of many hundreds, some of which were of large size, and showing their blossom at the time of their removal. The plan I adopted was as follows. In the first place, the earth must be excavated at some distance from the tree, leaving all the principal fibres and the earth adhering to them, in a compact ball, undermining it as much as possible, and taking care not to shake or injure the ball by twisting the stem of the tree, or using it as a lever to loosen the tap-roots; when this has been done, and a corresponding hole made at the place to which the tree is intended to be removed, the following method of taking it up and conveying it, is to be used.

Two pieces of iron must be previously formed, of the breadth and thickness of a common cart-wheel tire, three or four inches wide, and rather more than half an inch in thickness, and about six feet long, bent in the form shown at A, which will reduce it to three feet across. This size will do for trees requiring from two to four men to lift them; but a size, larger and stronger in proportion, will be wanted for trees which will require from eight to ten or more men to carry them. Put these irons under the ball of the earth as near the centre as possible, leaving a space between them of about two feet, and for larger trees a little more; then, run two strong poles, about eight or ten feet long or more, stout in proportion, and smaller at each end, and apply them as shown at B, to each side, passing them through the bends of the iron, so as to form a complete hand-barrow; then the tree may be lifted easily. Cross levers may be used for larger trees which require more men, as at C, so that as many as are wanted can apply their strength, without being in each other's way. The whole is fixed and unfixed without any loss of time, and requires no tying; nor is there any danger of slipping off. One of the chief advantages of this method is, that the tree is supported on the ball of earth instead of the earth being supported by the fibres of the roots, as is usual in most cases; for even in moving large trees with trucks, sledges, &c., most of the mischief is done in loading and unloading, and adjusting the tree to a proper position: all which can be done by the above method, without in the least injuring the fibres &c. The roots which extend beyond the ball of earth must be cut off at the *outer* side of the trench, and be left projecting; and in taking up, it is advisable to go much wider with the spade from it, than the ball of earth is intended to be; the ball being afterwards reduced, if need be, by a pick, so that a single root need not be injured by it. In removing very large trees, the tap-roots which cannot easily be got at, may be separated readily, by a long chisel applied under the ball of earth and driven by a mallet; but in moderate-sized trees this will not be found necessary. This mode of transplanting trees is much cheaper and more successful than that of Sir H. Stewart; more generally applicable to every description of tree, and shrub, particularly to many whose fibrous roots cannot be exposed without destruction to the tree; by taking them up in the manner above described, and when in leaf and even blossom, they do not appear to feel the removal; and again, trees thus removed do not require support from stakes, as the hole dug for their reception might be made to fit exactly the bottom of the large ball of earth, which will then be found to steady them very sufficiently."

For the Farmers' Cabinet.

Frequent Stirring of the Soil.

Mr. Editor,—Nothing strikes me as more just and rational, than the remarks of a subscriber, at page 353 of the last number of the Cabinet, on the "pulverization of soils." There was a time, when a system of fallowing for this express purpose, recommending to give as many as from four to nine different ploughings during the year, was as rigidly preserved, as the want of all that relates to it, is now the order of the day; but I begin to see that here also, the middle path is the best; for, whether it be that the crop draws its chief nourishment from the air, or the earth, or both, the due pulverization of the soil must still be of importance, to enable the crop to seek its pabulum *in the pasture of the earth*, as Jethro Tull terms it. And although I am sure I am no fallowist, yet I am as sure that to properly pulverize certain descriptions of soils, requires fit times and seasons, and the labour of the hands—all which is costly and troublesome perhaps; but unless we do something for the renovation of our soils in the way of returning to them what we have taken away, they will go on to *deteriorate*, instead of *improve*, as, with good managers, land ought always to do; and there is no way in which this can so easily and profitably be done, as by oft-repeated stirring and pulverizing the soil.

A book has lately fallen into my hands, in which the subject is considered in a very just and lucid manner; and although it was published at a time when the doctrine of fallowing was believed in and practised rigidly, yet the excellent sense and sound reasoning of the writer have enabled him to choose that middle course, which, even now is, I consider, perfectly *in season*. The work is entitled, "Observations on Husbandry," by Edward Lisle, residing in the county of Hampshire (England,) a part of the kingdom which has always ranked high in the estimate of agricultural knowledge; printed in the year 1750. In his chapter on ploughing, the author says:

"The ancient writers on husbandry lay a very great stress on making the ground fine by frequent ploughings; the Romans conceiving that they could not give their lands too much tillage, especially if it be of a rich nature, so as to hold water; then it ought to be turned up so often and reduced to so fine a powder, that the track of the plough-share may be scarcely distinguishable in it. The sun and air are thus enabled to operate fully upon it, by which the soil is benefited more than by a coat of dung. Besides, the water sinks more easily through pulverized earth,* so that the roots of the plants are in less danger of being suffocated by too much moisture, or of becoming injured and destroyed by the cold. And there is this further advantage in it—by admitting the air more plentifully into the vessels of the roots, it gives them a freer respiration, which is no less necessary to plants than to animals. Those, therefore, labour under error, who fancy that the turning and stirring of land frequently in the winter, before it is employed for a crop, causes it to exhale and spend itself; there being, in truth, no compost or dressing comparable to this continual motion, for it evaporates the malignant impurities of the imprisoned air, loosening the parts, and giving deliverance to these seminal salts and rudiments, which, wherever latent, are free to move and exert themselves: more benefit is thus ascribed to repeated stirrings, opening and ventilating the earth, than to dunging. But if to pulverize the soil were the only end in ploughing the land, without regard to opening it to the emanations of the sun, a frosty winter-fallow would do this and make it as friable as a summer-fallow; but the difference is great, for the sun, as has been already said, improves the earth as much as dung does; therefore, the more you open the land to the influence of the sun by ploughing, the greater the benefit. In Asia and other burning countries their grain does not scorch; and this is owing to the fineness to which their land is reduced by pulverization: they having such dry seasons for fallowing, the soil falls down much closer about the roots than it does here, and does not bake and crack by the heat, but by reason of its mellow parts, *drinks in abundance of the dews*, which our land, less friable, does not. But, beneficial as is the practice of repeatedly stirring the soil, it is better to omit it altogether than to turn up the ground while it is wet, and in a state of mortar, or even when it is only partially wet, after a long season of drought; for if you touch it while in this wet and dauby condition, there will be no working it after for the whole year—it must lie useless; and if you plough it up when the surface only has thus been thoroughly wetted, it will be injured for three years after. The best season for stirring the land is, certainly, when it is neither too wet or too dry, for by too much moisture, it will stick together and be like mortar; and after a long drought, and although a little moistened at the top, the ploughshare will either not be able to penetrate it at all, or if it should enter, it will not render it fine but turn it up in large clods, which will be a continual hindrance to the next ploughing, and at last be left unbroken and in impenetrable lumps on the field; and add to this, the part which lies deepest is always the least fruitful. One great use in fallowing is, to

* Another authority for the use of the subsoil plough.

cause the weeds to grow, that they may be turned down at the next ploughing: I summer-fallowed a field when one part of it was burning-dry, the other part dry also, but somewhat moister than the former; at Michaelmas, that part which had been ploughed burning-dry had ten times more weeds on it than the other; from whence I infer that the dryer you fallow, the better for the destruction of the weeds. Again, I fallowed part of a field burning-dry in July, immediately upon which came a very hard rain, which made the land, although ploughed dry, to fall flat and hard, and in which at Michaelmas very few weeds appeared—for the soil was by the rain so completely bound and fastened, that the seeds of the weeds could not vegetate and find their way through it. On sound experience, I am thoroughly convinced that no land, especially that which is heavy and cold, ought to be stirred while it is wet; for although the ground may work to appearance mellow, as to the temper of the earth, yet being stirred while wet and heavy, the grass will grow so as to clod it together, and it will become too close and impenetrable for any crop to flourish on it. The air and watery parts in earth ought to have a free circulation, as in our human bodies; otherwise, a corruption and poison of humours arises; and the case is the same in earth ploughed up wet, which clings together and confines the watery body, which then becomes very great, until it becomes corrupt, and can imbibe no fresh air, dew, &c.; but the earth, like our bodies, should be always *taking in and perspiring out.* If, then, your land be cold and clayey, take care to plough it up while it is in a perfectly dry state, as well as *dry over head;* and stop, when either of these cases is wanting—giving your oxen play, or contrive other work for them; and when your land is worked in this state, it will always turn up again mellow, rotten, and in good order. And by such methods, of never working your land while it is cold and wet, it will in a few years become marvellously sweetened, healthy and kind to all crops, and you will obtain a dominion over the weeds and natural grasses of the soil, so that after it has lain to clover for a season, the land will turn up in fine style and perfectly friable, which is an auspicious temper to promise a good crop." A.

The neatest way to separate Bees-wax from the comb, is, to tie it up in a linen or woollen cloth or bag with a pebble or two to keep it from floating; place it in a kettle of cold water, which hang over the fire; as the water heats, the wax melts and rises to the surface, while all the impurities remain in the bag.

To the Editor of the Farmers' Cabinet.

The Honey-Bee.

In that very interesting and entertaining book, "Jessie's Gleanings in Natural History," there is an extremely curious account of the operations of the Queen-Bee, which is as novel as it is entertaining; and as the attention of the public has been drawn to the business of bee-breeding, by the many works and essays that have lately been published both in the Cabinet and elsewhere, I think it probable that your readers would be pleased with an extract or two from one of the most pleasing works that has ever appeared on that universal topic, "The natural history of beasts, birds, and fishes"—speaking of the honey-bee, the writer says, "I have some experimental hives, which enable me very accurately to inspect the operations of my bees; from the construction of these hives, the combs are necessarily built between two panes of glass, so that on drawing the sliders, the two surfaces of a comb are exposed to view. In this way I am able to see almost every thing that is going forward. And I have observed, that when the queen-bee has an inclination to deposit her eggs, she goes forth, accompanied by six or eight working bees as a guard, whose stomachs are filled with honey. She is very deliberate in her motions, and seems to proceed with great caution; she first looks into a cell, and if she finds it perfectly empty, she draws up her long body and deposits an egg. In this way she slowly proceeds till she has dropped ten or twelve eggs, when, perhaps feeling exhausted, she is fed by one of the attendant bees, who have surrounded her the whole time; and this is done by the bee ejecting the honey from its stomach into the mouth of the queen; when this has been done, the bee goes away and another takes its place. The operation of laying her eggs again goes on, and is again succeeded by the same mode of feeding, the attendant bees frequently touching the antennæ of the queen with their own. When the operation of laying the eggs is completed, and it generally occupies some time, the queen retires to that part of the hive which is most filled with bees. During her progress, the surface of the comb is very little intruded upon, and the space seems purposely to be left unoccupied; some few of the cells, however, in a brood comb, are passed over by the queen, and afterwards filled, either with honey or farina; these serving as deposits of food, from which the neighbouring brood may be fed more readily, as such cells are never covered with wax. I have for many years watched my hives with the greatest care and assiduity, but have never yet seen the queen-bee leave the hive, except at the time of swarming. Her person

is so easily distinguished from the other bees by any one at all conversant with them, that if the queen absented herself from the hive in the way that Huber describes her as doing, it seems next to impossible that she should not have been perceived, either on her departure from, or her return to the hive.

The vision of bees seems very imperfect; I have frequently turned a hive, so as to make the entrance about two or three inches from its former position, and have then always found the bees at a loss to gain admittance; indeed, they seem rather to *feel* their way than to *see* it, after they have once landed themselves on the platform of their hives. Their progress through the air is always made in a direct line to the hive, and the instinct which enables them to find it amongst forty or fifty others placed in a row, and so nearly similar to each other, is very striking. Mr. Rogers, in his "Pleasures of Memory," has a pretty idea on this subject—

'The varied scents that charmed her as she flew,'

he thinks might point out the way of her return to the hive.

The summer of 1818 was unusually dry and hot, and in July, flowers of almost every description had entirely disappeared; I observed that the bees, in consequence of this, seldom left their hives in search of honey, although the weather, one would have thought, would have tempted them out; they seemed, indeed, to be perfectly aware that their labours would be useless. I recollect meeting with an account of a hive of bees being transported from a distant place to a spot by the side of a mountain in Italy, where they could procure honey all the year round; and finding this to be the case, they soon gave up stocking their hive, and only went out to collect honey as they wanted it; and the same observation has been made on bees taken from Europe to the West Indies, who, the first year, stored their hives as usual, but never afterwards; merely supplying themselves with food from day to day.

The lower orders of people in some places have curious superstitions respecting bees; a poor widow told me she had lost all her hives, and on enquiring the cause, she informed me, that on the death of her husband, she had neglected to inform the bees of it by tapping three times at each of the hives with the key of the house door! this being thought necessary to their preservation. It is also deemed necessary to put the bees in mourning on such occasions, by attaching a piece of black cloth to each hive; and the person who made the remark, mentioned a case in point, when, from the neglect of the custom, every bee in the apiary had perished! Mr. Loudon mentions, that he was informed of an old man who sang a psalm in front of some hives that were not doing well, but which, he said, would thrive, in consequence of that ceremony. I observe, that when a hive is fixed over a swarm, the bees will generally go into it of their own accord, uttering, at the same time, their satisfied hum, and seeming to be aware of the purpose for which it had been placed; but how the queen-bee is made acquainted that so convenient a place for her to retreat to is near at hand I know not, but so it is; for surrounded by thousands of her subjects who press around her, she makes her way through them all, and enters the hive, followed by the whole swarm; and here the work of preparing future cells is instantly commenced; and I have found that, although a swarm has not been able for two or three days to quit the hive after they had taken possession, a considerable number of cells had been nearly completed; and that, even as soon as the *foundation* of a cell has been finished, the queen-bee will sometimes deposit an egg upon it, the sides being afterwards built up. As the cells increase in number, honey and the farina of flowers are stored in them.

Nothing can be more melancholy than the appearance of bees in wet weather, some of them will come to the mouth of the hive, as if to take a view of the passing clouds, and others who quit the hive, return to it with the greatest difficulty. A sunny day in May is their delight, and it is then that the bees seem most active and most joyous, as well as every other living creature!"

"Blest power of sunshine! genial day,
What balm, what life is in thy ray!
To feel thee, is such real bliss,
That, had the world no joy but this,
To sit in sunshine, calm and sweet—
It were a world too exquisite!"

T. S.

Carbon, Oxygen, Hydrogen, and Nitrogen.

Of the 55 simple substances into which the solids, fluids, and gases of the inorganic world may be separated, vegetables are principally made up of four; and of these, only three exist in any large proportion; these three are carbon, oxygen, and hydrogen. Of these, *carbon* is by far the most abundant; it is nearly identical with charcoal, which consists of the carbon of the wood mixed up with a small quantity of earthy matter. If this charcoal be burned, it passes off in the form of carbonic acid gas, leaving a minute portion of white ash, which is principally of a mineral nature. It is chiefly to the carbon which it contains, that the hardness and solidity of wood are due; and in so large a portion does it exist in that tissue, that when the other elementary bodies — the oxygen and

hydrogen—have been separated, the carbon retains the form of the tissues in great beauty and perfection, so that a piece of charcoal will indicate the character of the wood from which it was made, nearly as well as would a section of an unburnt branch. On the other hand, in proportion as the tissues of the plant are defined in carbon, do we find them deficient in firmness of structure. When, therefore, we consider the large quantities of carbonic acid extricated by the respiration of animals, and by the immense amount of combustion of coal which is constantly going on in our large towns, there would seem no difficulty in understanding how it may be supplied to plants; but so vast is the extent of the atmosphere through which the carbonic acid has to be diffused, that any given bulk of air only contains about 1–1000th part of this gas. Hence, it might be supposed impossible for the gigantic mass of carbon contained in the wood of a wide-spreading forest to have been derived chiefly, if not entirely from this source, and such is seen to be the case; for although the soil may contain carbon, none of it is taken up in a solid form; and its quantity rather increases than diminishes in the course of years.

Oxygen is contained largely in plants; and the presence of it in the air which surrounds them, is very necessary to their healthful existence, chiefly as affording the means by which, as already explained, the superfluous carbon is removed. This element is equally necessary to animals, and it constitutes about a fifth part of the air we breathe. A portion of this air is dissolved, as it were, in water, and it is in this manner that fish and other aquatic animals as well as plants are supplied with oxygen, Most, if not all, however, of the oxygen which is contained in vegetable substances, is taken up by them, either in combination with carbon, or in unison with hydrogen—a body with which it forms water.

Hydrogen is also contained largely in plants; and in most of the substances into whose composition it enters, it is combined with oxygen nearly in the same proportion as in water; although it is probable that a small quantity is introduced with nitrogen in the form of *ammonia*—the pungent gas which gives strength to hartshorn, smelling salts, &c.—we may regard the water introduced into the substance of plants by their roots, and also in part absorbed by their general surface, as the chief source of this element, as well as if the oxygen continued in the vegetable structure.

Nitrogen has not been commonly regarded as an important element of the vegetable structure, but it has been lately shown to exist largely in the growing parts of plants; and there seems reason to believe its presence to be essential to the increase of their fabric by the formation of new parts. It is an important ingredient in the substance called *gluten*, which exists largely in the seeds of the various kinds of corn or grain, and most of all, in wheat; and it is in part on this account that wheat-bread is the most nutritious of all vegetable substances ordinarily used as food, since it approaches nearer in composition than almost any other to animal flesh, which contains a much larger proportion of nitrogen than exists in most vegetable substances. It is, indeed, on account of their entire deficiency in nitrogen, that gum, sugar, and other similar products are not fit to maintain animal life by themselves. Nitrogen constitutes four fifths of the atmosphere, but it does not seem to be taken in by the plant in its simple form; but this gas with hydrogen, forms *ammonia*, of which a minute quantity always exists in the atmosphere, being chiefly supplied to it by the decomposition of animal matter; and this is absorbed by the soil and taken up by the roots; and it is in the supply of ammonia which they yield, that the principal benefit of animal manure seems to consist. *Treatise of Veg. Physiology.*

Free accession of Air necessary to Decomposition.

The decomposition of the vegetable matter of the soil requires the free access of air to every part of it; for if any substance, however rapid its tendency to decay, be completely secluded from the atmosphere, little or no change in it can take place: it is on this principle that various articles of food are now preserved for subsequent use in tin cases completely closed, and possess their perfect flavour after exposure to every variety of temperature for several years. Every particle of the soil needs to be surrounded with oxygen for the production from it of carbonic acid; and to procure this condition is one of the chief objects, which is effected by tilling and loosening the soil; in this respect, therefore, it is manifest that a tenacious clayey soil is inferior to all others, and its injurious character can only be remedied by admixture with other substances, or by laborious cultivation. This necessity of unimpeded access of air to that part of the ground through which the roots of plants are distributed is shown in an interesting manner, when trees are planted too deep in the soil, or when their roots have been covered with an additional quantity of earth, when, if the tree be old or sickly, it generally dies, but if young and vigorous, it sends out a new set of roots nearer the surface, and the extension of the old ones ceases.—*Veg. Phy.*

Growth of Vegetables in the Living Bodies of Animals.

Animals, as well as plants, are liable to the growth of fungi within their bodies. There is a species of wasp in the West Indies, of which individuals are often seen flying about with plants, of their own length, projecting from some part of their surface; the germs of these having been originally introduced through the breathing pores at their sides, which greatly resemble those of plants, and taking root, as it were, in their substance, so as to develope a luxuriant vegetation. In time, the fungous growth spreads through the body and destroys the life of the insect, when it grows more rapidly, the decomposing tissue of the dead body being still more adapted than the living structure, to afford it nutriment. A very curious example of the growth of fungi within the living animal body has lately been detected, and the knowledge of it has proved of great importance. The silk-worm breeders of Italy and the south of France, especially in particular districts, have been subject to a considerable loss by a disease termed *muscardine*, which sometimes attacks the worms in large numbers just when they are about to enter the chrysalis state. This disease has been ascertained to be due to the growth of a minute vegetable of the fungus tribe—nearly resembling the common mould, within their bodies; and it is capable of being communicated to any individual from one already affected, by the introduction beneath the skin of the former, of some particles of the diseased portion of the latter; and it then spreads in the fatty mass beneath the skin, occasioning the destruction of this tissue, which is very important as a reservoir of nourishment to the animal when about to pass into a state of complete inactivity. The plant spreads by the extension of its own structure, and also by the production of minute germs, which are taken up by the circulating blood and carried to distant parts of the body: the disease invariably occasions the death of the silk-worm, but does not show itself externally until afterwards, when it rapidly shoots forth from beneath the skin. The caterpillar, chrysalis, and moth are all susceptible of having this disease communicated to them by the kind of inoculation just described, but it is only the first which usually receives it spontaneously. The importance of this disease to the breeders of silk-worms led, as soon as its true nature was understood, to careful enquiry into the circumstances which favour the production of the fungus; and it has been shown, that if the bodies of the caterpillars which, from various causes, have died during breeding, be thrown together in heaps and exposed to the influence of a warm and moist atmosphere, this fungus almost invariably appears upon them, just as other kinds of mould appear upon other decaying substances; and it is then propagated to the living worms by the diffusion of its germs through the atmosphere. The knowledge of this fact, and the precautions taken in consequence, have greatly diminished the mortality.—*Veg. Phy.*

To the Editor of the Farmers' Cabinet.

A Country Cow.

Esteemed Friend,—As I know it will be interesting to you, and I *believe* to many of your readers, I send you an account of the butter obtained from a cow—which you will remember to have seen when last I had the pleasure to see you at Allerton,—known as the "M'Elroy Cow," and which, considering that she had only the common feed of the rest of the dairy, is, I think, to be considered rather extraordinary. This cow is well known in this vicinity as the "M'Elroy Cow," from the name of her former possessor, who was a tenant on the farm of Samuel Worth, of whom I purchased her for sixty dollars, and who assured me she had, with additional feed, made sixteen pounds of butter for several successive weeks; the capacity of her udder being oftentimes so great as almost to deprive her of the means of rising, when lying down. She is said to be nearly related to the Guernsey breed, which, if dairy properties alone are regarded, without reference to shape, size, and feeding, stand probably unrivalled. These cows, from their being small, and occupying little room, are often brought over by vessels from Europe as ship-cows, for the use of the passengers, being selected on account of their superior yield of milk in proportion to food consumed; and it is, therefore, more than probable that the "M'Elroy Cow" is descended from such importation, for she is as homely an animal in these and some other respects as can well be conceived.

I have succeeded in obtaining from her two heifer calves, which fell on the 1st day of April, 1841 and '2, respectively; these are sired by "His Grace," my imported Durham bull, and give fair promise of proving themselves worthy their claim to *noble blood*. The amount of butter made in one week is within two ounces of fourteen pounds, the milk averaging about thirty quarts per day; the yield of butter being only one and a half pounds short of that of my imported Durham-cow Bessie; and I have reason to believe that with moderate feed, in addition to pasture, the two cows would make from thirty-one to thirty-two pounds of butter per week.

Allerton, June 8, 1842. Paschall Morris.

The Pleasures of a Country Life.

"I HAVE but one word more to add to the advantages of husbandry, which is, that of all professions, none is more innocent or more pleasant. The business of it goes on in a known and certain course from season to season, from year to year; the gains from it are most satisfactory to a scrupulous conscience because our goods are sold in open market; are set up together with those of our neighbours, and of the same kind and species, whereby the ignorant may make the better comparison of their worth. We do not grow rich by jobbing or by buying and selling again, the profit of which too often consists in outwitting and preying on one another, but our advantages arise from the gifts of our beneficent mother the Earth, whose gratitude generally requites the tiller's care, and by whose increase we hurt no one. Our dependence, next to God's blessing, is on our own skill and industry, and though the season disappoints us sometimes, yet that is neither so often, so great, or so fatal as the disappointments of those in other professions, whose trust and dependence is upon man. What miserable calamities fall out from the necessary trust in trade which one citizen must give to another and to his customers! whereas, the farmer sells for ready money. He may thrive also, without supplanting his brother, which the courtier or tradesman can rarely do. And certainly, that person must live a pleasant life, whose death every one desires to die — and there are very few of any art or employment but who propose to themselves, if they are able, a country retirement with at least some little of husbandry, in the last stage of their lives: if so, although other occupations may be in themselves innocent, yet this almost universal desire in men to quit them before they die, looks as if they found it difficult to discharge their consciences in them. — They must be sensible that they can make no great figure as *husbandmen* — but there is some delight, even in negative virtue, in being awake and doing no ill. And, as I have had some taste and relish of these pleasures, I am desirous to propagate the sense of them as universally as I can; and it would greatly add to my satisfaction to have partakers with me in the enjoyment of it." EDWARD LISLE.

Root Culture.

To make the raising of roots profitable, the business ought to be conducted on a considerable scale and with the best and most careful management. By preparing the land in season — the first ploughing being given in the autumn — and stirring it frequently to cause the weeds to vegetate, that they might be destroyed by the harrow or plough, thus rendering the soil loose and mellow and thoroughly pulverized, and then soaking the seed that the plants may be up before the weeds, there will be little labour in the after cultivation of the crop.

There are different opinions relative to the value of the several crops usually raised for stock; the ruta-baga is not so generally raised as formerly, as it is not now regarded as so valuable for stock as the beet and carrot; the sugar-beet being also a surer crop, less liable to injury from insects and drought; it is equally productive, and excellent for all kinds of stock, although some cases are cited in which they have been considered inferior; but these are exceptions of rare occurrence: yet the ruta-baga claims attention, as it may be sown later than any other root except the common turnip, and has been found productive in seasons when the longer tap-rooted plants have suffered from drought. But on light sandy soils the carrot is one of the most valuable roots; it is excellent food for all kinds of stock; yields well, keeps in good condition through the winter, and is one of the very best kinds of food for milk-cows, never having been known to disagree with any kind of stock. This root has received less attention than the ruta-baga and the beet, but its excellence is becoming known, and will lead to a more general cultivation. The parsnep is regarded as one of the most profitable crops that can be raised, as well as attended with less labour in the cultivation than the carrot, but as it has hitherto received little attention for this purpose, but few experiments have yet been made.—*Far. Jour.*

Pii orant taciti.

THE turf shall be my fragrant shrine;
My temple, Lord, that arch of thine;
My censer's breath, thy mountain airs,
And silent thoughts, my only prayers!
My choir shall be the moonlight waves,
When murmuring homeward to their caves;
Or, when the stillness of the sea,
— E'en more than music — breathes of Thee!

I 'll seek by day some glade unknown,
All light and silence, like thy throne!
And the pale stars shall be, at night,
The only eyes that watch my rite!
Thy heaven, on which 't is bliss to look,
Shall be my pure and shining book,
Where I shall read, in words of flame,
The glories of thy wond'rous name.
I 'll read thy *anger* in the rack,
That clouds awhile the day-beams' track
Thy *mercy*, in the azure hue
Of sunny brightness, breaking through.
There 's nothing bright, above, below,
From flowers that bloom, to stars that glow,
But in its light my soul can see
Some feature of the Deity!
There 's nothing dark, below, above,
But in its gloom I trace thy love,
And meekly wait that moment, when
Thy touch shall make all bright again!

Notices.

With the present number, the sixth volume of the Cabinet closes. On this occasion, the Proprietor and Editor would renew the hope that their labours have not been unavailing. They feel pleasure in adding, at no time have the assurances of their friends been more cordial, nor has a more general expression of satisfaction been evinced by their subscribers.

The first number of the 7th volume of the Farmers' Cabinet will be published on the 15th of the 8th month, (August) and it will be the earnest endeavour of all connected with it, to render the work worthy the attention and support of its friends, and an agreeable vehicle for the interchange of communication between their valued correspondents, upon whose future favours they rely with much confidence; with grateful acknowledgments for past favours.

"The Farmers' Land Measurer."

To James Pedder, Editor Far. Cab.

Thy little volume denominated the "Farmers' Land Measurer or Pocket Companion," a copy of which thou wast good enough to present to the Chester and Delaware County Agricultural Society, was referred to a committee, consisting of the subscribers, for examination and their expression upon its merits—

The committee have great pleasure in recommending it as a valuable "companion" to the practical farmer; in which he will find easy methods of ascertaining any given parcel of land—of measuring grain in bulk—of ascertaining the size of measures, and other useful information on matters within his practice, of frequent recurrence.

Jabez Jenkins.
Louis P. Hoopes.
Paschall Worth.
Paschall Morris.

The noble cattle, seven in number, bred and fed by Edward Tonkin, of Clarkesboro', are now on exhibition at Cooper's Point, Camden, opposite Philadelphia; having been purchased by a company of gentlemen of Jersey for this express purpose. The public have now, therefore, an opportunity of viewing a herd of animals such as were never before exhibited in this country, or perhaps in any other, for the very low price of 12½ cts. And it is confidently expected that many thousands of our friends from the far West and the extreme South, as well as the intelligent breeders of the North and the East, will avail themselves of the opportunity, while in Philadelphia on business, of stepping across by steamboat to Cooper's Point, where they will find them in a pleasant shady garden, in convenient apartments fitted up for their reception. An engraved portrait of one of them, "Jersey Independence," is given at p. 241 of the Cabinet for March; and many of our readers have now an opportunity of judging of the qualifications of our draughtsman and engraver, for the delineation *from life* of those animals committed to their care and execution—the resemblance will be found on examination to be perfect. Unforeseen circumstances, beyond the control of the Proprietors of the Cabinet, have hitherto prevented us from fulfilling the promise of embellishing our pages with the remaining portraits of these splendid specimens of improved Short Horns; to be able to fulfil that engagement, will be exceedingly agreeable to us.

By the hands of Luther Tucker, Esq., the Secretary of the State Agricultural Society of New-York, we have received their volume of printed "Transactions for the year 1841."—It is a highly interesting work of more than 400 pages, containing many very valuable papers in answer to statistical enquiries, &c., and on other subjects of the first importance to the agriculturist and husbandman; admirably arranged and very elegantly printed, it forms a record of "transactions" highly creditable to the "State Agricultural Society of New-York."

Our readers will recollect that Messrs. Sharp and Zollickoffer imported from England a few bushels of the Red Cone-Wheat the last season, for experiment in this country. It was sown on stiff and cold land as recommended, and we are happy to inform, that present appearances fully justify their expectations; it has come true to character, the straw stout, the ears very long, well filled, and showing no signs of rust, although the crop will be late in ripening, as was also expected. No opportunity has been afforded, the present year, to judge of its character of being fly-proof. Samples, when ripe, will be exhibited at our office.

The quantity of rain which fell during the 6th month (June), 1842, was three inches and one fifth of an inch ..... 3.2 inches.

Pennsylvania Hospital, 7th mo. 1, 1842.

THE FARMERS' CABINET,

IS PUBLISHED BY

JOSIAH TATUM, No. 50 NORTH FOURTH STREET, PHILADELPHIA.

It is edited by James Pedder, and is issued on the fifteenth of every month, in numbers of 32 octavo pages each. The subjects will be illustrated by engravings, whenever they can be appropriately introduced.

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